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Application of:	**Albert et al.**
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Cambridge, Massachusetts
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APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Sir:

This is an appeal from the final rejection of all claims of the above application as set forth in the Office Action mailed October 4, 2007.

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REAL PARTY IN INTEREST

The real party in interest in this appeal is E Ink Corporation, the assignee of record, a corporation organized and existing under the laws of the State of Delaware, of 733 Concord Avenue, Cambridge, MA 02138-1002.

RELATED APPEALS AND INTERFERENCES

There are no related appeals and interferences.

STATUS OF CLAIMS

Claims 1-20 are pending in this application. Claims 1-16, 18 and 20 stand finally rejected. Claims 17 and 19 stand objected to as dependent upon a rejected base claim but indicated as allowable if rewritten in independent form. No claim is subject to a restriction or election requirement. All claims are appealed. A copy of the claims on appeal appears in the Appendix to this Brief.

STATUS OF AMENDMENTS

The sole Amendment filed during prosecution of this application has been entered. No Amendment was filed after the final Office Action.

SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention is illustrated in Figures 5A-5F of the application. Claim 1 is directed to an electrically active display (40; 56; 70; 80; 90; 98) comprising a bistable optoelectrically active display medium (46) capable of changing its optical state upon application of an electric field thereto and having first and second surfaces on opposed sides thereof (the upper and lower surfaces as illustrated in Figures 5A-5F). The display further comprises an optically transmissive electrode (44) in contact with the first (upper) surface of the display medium (46), and an adhesive layer (48; 64) disposed on the second (lower) surface of the display medium (46); the (lower – as illustrated in Figures 5A-5F) surface of the adhesive (48; 64) remote from the display medium (46) forming an external surface of the display (40; 56; 70; 80; 90; 98), so that the display (40; 56; 70; 80; 90; 98) can be attached to a receiving surface (for example, a backplane comprising rear electrodes; see Paragraph 70 of the specification) by the adhesive layer (48; 64).

Claim 2 is directed to a display according to claim 1 further comprising an optically transmissive layer (the substrate 42) on the opposed side of the electrode (44) from the display medium (46).

Claim 3 is directed to a display according to claim 1 in which the electrode (44) comprises a metal oxide, for example the ITO (indium tin oxide) mentioned in claim 4 and in Paragraph 69 of the specification.

Claim 5 is directed to a display according to claim 1 in which the display medium (46) comprises bichromal microspheres, as mentioned in Paragraph 69 of the specification.

Claim 6 is directed to a display according to claim 1 in which the display medium (46) comprises an electrophoretic medium comprising at least one species of particles dispersed in a fluid medium, while claim 7 is directed to such a displays in

which the display medium (46) comprises an encapsulated electrophoretic medium; see Paragraphs 10 and 69 of the specification.

Claim 8 is directed to a display according to claim 1 further comprising at least one conductive via (60 in Figures 5B,5C and 5E) extending from the electrode (44) through the display medium (46). Claim 9 is directed to a display according to claim 8 further comprising at least one contact pad (62 in Figures 5B, 5C and 5E) electrically connected to the at least one via (60) and disposed on the opposed side of the display medium (46) from the electrode (44).

Claims 16-19 will now be discussed out of numerical order so as to deal with all the claims directed to displays before turning to claims directed to processes for forming such displays.

Claim 16 is directed to a display according to claim 1 further comprising at least one rear electrode (82 in Figures 5D and 5E) disposed between the display medium (46) and the adhesive layer (64). Claim 17 is directed to a display according to claim 16 in which at least the portion of the adhesive layer (64) covering the at least one rear electrode (82) is conductive (see for example Paragraph 73 of the specification).

Claim 18 is directed to an electrically active display (80; 90) comprising a bistable optoelectrically active display medium (46) capable of changing its optical state upon application of an electric field thereto and having first and second surfaces on opposed sides thereof. The display further comprises an optically transmissive first electrode (44) in contact with the first (upper as illustrated in Figures 5D and 5E) surface of the display medium (46), an adhesive layer (64) disposed on the second (lower) surface of the display medium (46), and at least one second electrode (82) disposed between the display medium (46) and the adhesive layer (64).

Claim 19 is directed to a display according to claim 18 in which at least the portion of the adhesive layer (64) covering the at least one second electrode (82) is conductive (see for example Paragraph 73 of the specification).

Claim 10 is directed to a process for forming a display using the structure of claim 1. This process comprises providing an electrically active display (40; 56; 70; 80; 90; 98) comprising a bistable-optoelectrically active display medium (46) capable of changing its optical state upon application of an electric field thereto and having first and second surfaces on opposed sides thereof; an optically transmissive electrode (44) in contact with the first surface of the display medium (46); and an adhesive layer (48) disposed on the second surface of the display medium (46), the surface of the adhesive (48) remote from the display medium (46) forming an external surface of the display (40; 56; 70; 80; 90; 98). The process further comprises providing a receiving surface comprising at least one electrode (see Paragraph 70 of the specification) and attaching the display (40; 56; 70; 80; 90; 98) to the receiving surface by means of the adhesive layer (48).

Claim 11 is directed to a process according to claim 10 in which the display (40; 56; 70; 80; 90; 98) comprises at least one conductive via (60 in Figures 5B, 5C and 5E) extending from the electrode (44) through the display medium (46), and in which, after attachment of the display (40; 56; 70; 80; 90; 98) to the receiving surface, the via (60) is contacted with at least one electrode on the receiving surface for holding the electrode at a specific potential.

Claims 12-15 are directed to processes according to claim 10 having the same features as claims 2, 5, 6 and 7 respectively, as already discussed above.

Claim 20 is essentially directed to a process for forming a display using the structure of claim 18. This process comprises providing an electrically active display (80; 90) comprising an optoelectrically active display medium (46) capable of changing its optical state upon application of an electric field thereto and having first and second surfaces on opposed sides thereof. The display further comprises an optically transmissive first electrode (44) in contact with the first (upper as illustrated in Figures 5D and 5E) surface of the display medium (46), an adhesive layer (64) disposed on the

second (lower) surface of the display medium (46), and at least one second electrode (82) disposed between the display medium (46) and the adhesive layer (64). The process further comprises providing a receiving surface comprising at least one electrode (see Paragraph 70 of the specification) and attaching the display (80; 90) to the receiving surface by means of the adhesive layer (64).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1- 4, 10,12, 16,18 and 20 stand rejected under 35 USC 103(a) as unpatentable over Rothschild et al., U.S. Patent No. 5,802,015 in view of Sato et al., U.S. Patent No. 5,173,342 and Inoue et al., U.S. Patent No. 4,922,241.

Claims 5 and 13 stand rejected under 35 USC 103(a) as unpatentable over Rothschild, Sato and Inoue as applied to claim 1, and further in view of Richley, U.S. Patent No. 5,900,858.

Claims 6, 7, 14 and 15 stand rejected under 35 USC 103(a) as unpatentable over Rothschild, Sato and Inoue as applied to claim 1, and further in view of Sheridon, U.S. Patent No. 4,126,854.

Claims 8, 9 and 11 stand rejected under 35 USC 103(a) as unpatentable over Rothschild and Sato as applied to claim 1, and further in view of Brody, U.S. Patent No. 6,285,343.

Finally, claims 17 and 19 stand objected to as being dependent upon a rejected base claim but allowable if rewritten in independent form.

ARGUMENT

Summary

A. Claims 1-4, 10, 12, 16, 18 and 20 are not unpatentable over Rothschild, Sato and Inoue because Rothschild and Sato do not suggest the use of a bistable medium, and there is no logical way to combine these two references with Inoue.

B. Claims 5 and 13 are not unpatentable over Rothschild, Sato, Inoue and Richley for the same reasons as in A above.

C. Claims 6, 7, 14 and 15 are not unpatentable over Rothschild, Sato, Inoue and Sheridon for the same reasons as in A above. In addition, Sheridon does not describe an electrophoretic medium within the meaning of claims 6, 7, 14 and 15.

D. Claims 8, 9 and 11 are not unpatentable over Rothschild, Sato and Brody (the final Office Action does not explicitly mention Inoue, but since claims 8 and 9 depend ultimately from claim 1 and claim 11 depends from claim 10, it appears that logically this rejection should include Inoue) for the same reasons as in A above. In addition, Brody does not disclose a conductive via extending through a display medium.

Detailed argument

A. Rejection of claims 1-4, 10, 12, 16, 18 and 20 under 35 USC 103(a) over Rothschild, Sato and Inoue

(i) Relevant Disclosure of Rothschild

Rothschild an electrically active display comprising an optoelectrically active display medium (a twisted nematic liquid crystal; see, for example, column 7, line 38 of Rothschild), an adhesive layer (for example, the double-sided foam tape 18 mentioned at column 5, lines 3-4 of Rothschild), with the surface of adhesive layer remote from the display medium forming an external surface of the display, so that the display can be attached to a receiving surface by the adhesive (the tape 18 attaches the display or label to the surface of a bottle 11; see Figures 1 and 2 of Rothschild).

(ii) Relevant Disclosure of Sato

Sato describes a liquid crystal display having a transparent front electrode formed from ITO, tin dioxide or the like (see column 2, lines 28-29 of Sato).

(iii) Relevant Disclosure of Inoue

Inoue describes a liquid crystal display device having a memory function, e.g., a display device using a ferroelectric liquid crystal element. Inoue teaches (see the passage beginning at column 1, line 40) that when a display element is arranged in a matrix electrode structure using a liquid crystal material, and a signal voltage above a threshold value is applied to a selected area (i.e., a selected point) but not to non-selected intersections (non-selected points) light is transmitted at the non-selected point(s) due to the twist structure of the liquid crystal and an optical rotary power, thereby providing an imaging element.

However, Inoue teaches, when the number (N) of scanning lines is increased in the above system, the duration (i.e., a duty ratio) for which an effective electric field is applied to one selected point during scanning of one frame is decreased at a rate of 1/N. As a result, a decrease in image contrast and crosstalk phenomenon cannot be avoided; the above phenomena inevitably occur when a liquid crystal without a bistable state is driven by utilizing an accumulation effect as a function of time (i.e., scanning is repeated). Therefore, Inoue teaches, a large screen with a high packing density of display elements cannot be obtained since the number of scanning lines cannot be increased sufficiently. Accordingly, in order to solve [these] problems posed by the conventional display elements using a TN liquid crystal, an FLC [ferroelectric liquid crystal] which has a bistable effect with respect to an electric field and allows an arrangement of a display element for maintaining the stable state is proposed by Inoue; see column 3, lines 13-18.

(ii) There is no logical way to combine Rothschild, Sato and Inoue

Nothing in Rothschild nor Sato suggests the use of a bistable medium; both references teach that a conventional liquid crystal medium performs adequately.

As noted above, Inoue is concerned with problems in active matrix displays having a large number of scan lines. No one skilled in the technology of liquid crystal displays would use this type of high resolution active matrix display in the Rothschild device. The Rothschild device is only required to display a single message such as the word "EXPIRED" (see Figure 8 and column 7, lines 38-52) and to flash this message. In the preferred device shown in Rothschild Figure 8, the desired message is printed on the rear surface of the display panel 14a, and the liquid crystal medium is simply rendered either transmissive or opaque to reveal or conceal the message. In such a device, since the whole area of the liquid crystal needs to be transmissive or opaque at the same time, it is only necessary to provide a single electrode on each side of the liquid crystal medium and to arrange a simple drive controller to apply either zero (for an opaque liquid crystal) or a sufficiently large voltage (for transmissive liquid crystal) across these two electrodes. Since the Rothschild apparatus only needs to display a single message, there is no need to provide an active matrix backplane with all the associated transistors, row and column electrodes, and complex drive circuitry required by such an active matrix display; as anyone skilled in the technology of electro-optic displays will appreciate, such an active matrix display is considerably more complex and costly than the simple type of on/off display described in Rothschild. *A fortiori*, there is no reason to use in Rothschild the type of high resolution active matrix display subject to the problems discussed in Inoue. Hence, there is no logical way to combine Rothschild, Sato and Inoue.

To put it in its simplest terms, the Rothschild display does not suffer from the problem which Inoue is designed to solve, and hence there is no incentive to combine Rothschild with Inoue.

For the foregoing reasons, claims 1-4, 10, 12, 16, 18 and 20 are not unpatentable over Rothschild, Sato and Inoue.

B. Rejection of claims 5 and 13 over Rothschild, Sato, Inoue and Richley

This rejection is traversed for the same reasons as the earlier rejection of claim 1 over Rothschild, Sato and Inoue as discussed in Part A above. There is nothing in Richley which renders it logical to combine Rothschild, Sato and Inoue.

C. Rejection of claims 6, 7, 14 and 15 over Rothschild, Sato, Inoue and Sheridon

This rejection is traversed for the same reasons as the earlier rejection of claim 1 over Rothschild, Sato and Inoue as discussed in Part A above. There is nothing in Sheridon which renders it logical to combine Rothschild, Sato and Inoue.

Furthermore, Sheridon does not describe an electrophoretic medium as that term is used in claims 6, 7, 14 and 15. Claims 6 and 14 explicitly define an electrophoretic medium as meaning a medium in which at least one species of particles are dispersed in a fluid medium. Sheridon does not disclose such a medium; rather, Sheridon describes a rotating bichromal ball medium of the type mentioned in claim 5, in which small spheres are held within discrete cavities in a polymeric matrix and a film of fluid is present between each sphere and the adjacent cavity wall to enable the sphere to rotate. Such a medium cannot be said to have particles *dispersed* in a fluid medium. In this connection, it should be noted that Sheridon describes the same general type of electro-optic medium as Richley (used to reject claim 5), whereas it should readily be apparent (see Paragraphs 68 and 69 of the present specification) that claims 5 and 6 relate to different types of electro-optic media.

D. Rejection of claims 8, 9 and 11 over Rothschild, Sato and Brody (with or without Inoue

This rejection is traversed for the same reasons as the earlier rejection of claim 1 over Rothschild, Sato and Inoue as discussed in Part A above. There is nothing in Brody which renders it logical to combine Rothschild, Sato and Inoue.

Furthermore, Brody does not describe a conductive via extending through a display medium. Brody describes a modular flat screen television display formed from a two dimensional array of discrete liquid crystal display modules which must (although Brody admittedly does not discuss this point in detail) be individually sealed to prevent escape of the liquid crystal medium. The interconnecting conductor 30 mentioned in the final Office Action extends between adjacent modules to provide interconnections between these modules. Since this interconnecting conductor 30 is spaced from the liquid crystal medium by the material used to seal the individual modules, the conductor 30 does not extend through the liquid crystal medium.

For all of the foregoing reasons, the rejections of the claims on appeal should be reversed and the application allowed.

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CLAIMS APPENDIX

Claims on Appeal

1. An electrically active display comprising:

a bistable optoelectrically active display medium capable of changing its optical state upon application of an electric field thereto and having first and second surfaces on opposed sides thereof;

an optically transmissive electrode in contact with the first surface of the display medium; and

an adhesive layer disposed on the second surface of the display medium, the surface of the adhesive remote from the display medium forming an external surface of the display, so that the display can be attached to a receiving surface by the adhesive layer.

2. An electrically active display according to claim 1 further comprising an optically transmissive layer on the opposed side of the electrode from the display medium.

3. An electrically active display according to claim 1 wherein the electrode comprises a metal oxide.

4. An electrically active display according to claim 3 wherein the electrode comprises indium tin oxide.

5. An electrically active display according to claim 1 wherein the display medium comprises bichromal microspheres.

6. An electrically active display according to claim 1 wherein the display medium comprises an electrophoretic medium comprising at least one species of particles dispersed in a fluid medium.

7. An electrically active display according to claim 6 wherein the display medium comprises an encapsulated electrophoretic medium.

8. An electrically active display according to claim 1 further comprising at least one conductive via extending from the electrode through the display medium.

9. An electrically active display according to claim 8 further comprising at least one contact pad electrically connected to the at least one via and disposed on the opposed side of the display medium from the electrode.

10. A process for forming a display, the process comprising:

providing an electrically active display comprising a bistable optoelectrically active display medium capable of changing its optical state upon application of an electric field thereto and having first and second surfaces on opposed sides thereof; an optically transmissive electrode in contact with the first surface of the display medium; and an adhesive layer disposed on the second surface of the display medium, the surface of the adhesive remote from the display medium forming an external surface of the display;

providing a receiving surface comprising at least one electrode; and

attaching the electrically active display to the receiving surface by means of the adhesive layer.

11. A process according to claim 10 wherein the electrically active display further comprises at least one conductive via extending from the electrode through the display medium, and wherein, after attachment of the electrically active display to the receiving surface, the via is contacted with at least one electrode on the receiving surface for holding the electrode of the electrically active display at a specific potential.

12. A process according to claim 10 wherein the electrically active display further comprises an optically transmissive layer on the opposed side of the electrode from the display medium.

13. A process according to claim 10 wherein the display medium comprises bichromal microspheres.

14. A process according to claim 10 wherein the display medium comprises an electrophoretic medium comprising at least one species of particles dispersed in a fluid medium.

15. A process according to claim 14 wherein the display medium comprises an encapsulated electrophoretic medium.

16. An electrically active display according to claim 1 further comprising at least one rear electrode disposed between the display medium and the adhesive layer.

17. An electrically active display according to claim 16 wherein at least the portion of the adhesive layer covering the at least one rear electrode is conductive.

18. An electrically active display comprising:

a bistable optoelectrically active display medium capable of changing its optical state upon application of an electric field thereto and having first and second surfaces on opposed sides thereof;

an optically transmissive first electrode in contact with the first surface of the display medium; and

an adhesive layer disposed on the second surface of the display medium; and

at least one second electrode disposed between the display medium and the adhesive layer.

19. An electrically active display according to claim 18 wherein at least the portion of the adhesive layer covering the at least one second electrode is conductive.

20. A process for forming a display, the process comprising:

providing an electrically active display comprising a bistable optoelectrically active display medium capable of changing its optical state upon application of an electric field thereto and having first and second surfaces on opposed sides thereof; an optically transmissive electrode in contact with the first surface of the display medium; an adhesive layer disposed on the second surface of the display medium, and at least one second electrode disposed between the display medium and the adhesive layer;

providing a receiving surface; and

attaching the electrically active display to the receiving surface by means of the adhesive layer.

EVIDENCE APPENDIX

[None]

RELATED PROCEEDINGS APPENDIX

[None]